Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

JARED W. PERDUE, P.E.
SECRETARY

September 8, 2026

Daniel Holt, PE, PTOE
Director, Project Delivery
Director, Technical Services
FHWA
400 West Washington Street, Suite 4200
Orlando, FL 32801

Re: State Specifications Office
Section: 962
Proposed Specification: **9621003 Structural Steel and Miscellaneous Metal Items (Other than Aluminum)**
Associated Specifications: **5500200 Fencing; 4250301 Inlets, Manholes, and Junction Boxes; 4360203 Trench Drain**

Dear Mr. Holt:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

The changes are proposed by Richard Stepp to allow the proprietary fencing type to receive Specifications and APL requirements to expedite District design processes, including pre-approved BABA options on the APL.

Please review and transmit your comments, if any, within two weeks (10 business days). Comments should be sent via email daniel.strickland@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at (850) 414-4130.

Sincerely,

Signature on File

Daniel Strickland, P.E.
State Specifications Engineer

DS/am
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

STRUCTURAL STEEL AND MISCELLANEOUS METAL ITEMS (OTHER THAN ALUMINUM)
(REV 6-30-26)

SUBARTICLE 962-10.3 is deleted and the following substituted:

962-10.3 Steel Grates: All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-13.

Table 962-13
APL Requirements for Steel Grates

Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

Provide steel grating in accordance with this section and Table 962-1~~3~~4. When vaned gratings are specified, AASHTO HL-93 load testing may be substituted for tensile testing when specified in the contract documents. When Alternate G is specified, provide galvanizing in accordance with 962-11.1.

Table 962-1~~3~~4
Requirements for Steel Grating

Product	Standard	Grade	Type/ Style	Reportable Properties
Steel Grating	A242	50	1	Composition, Tensile*, Killed
	A572		1, 2, 3, 5	Composition, Tensile*, Size, Killed
	A588		A, B, K	Composition, Tensile*, Fine Grain
	A1011	Any	SS, HSLAS, HSLAS-F	Designation, Style

* AASHTO HL-93 may be substituted for tensile testing for vaned gratings when specified.

SUBARTICLE 962-10.4 is deleted and the following substituted:

962-10.4 Galvanized Steel Sidewalk Cover Plates: All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-15.

Table 962-15 APL Requirements for Cover Plates	
Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

Cover Plates shall be slip resistant, random hatch matrix or suitable pattern, galvanized steel sidewalk fabricated from steel meeting the requirements of ASTM A36 or ASTM A709, Grade 36 or 50. Do not use diamond plate or surface applied slip resistant tapes, films, nonmetallic coatings or other similar materials. Fabricate cover plates in accordance with Standard Plans, Indexes 458-100 and 458-110. After shop fabrication, hot-dip galvanize cover plates in accordance with Section 962. Galvanized sidewalk cover plates shall have a minimum coefficient of friction on the top surface of 0.8 in dry condition, and 0.65 in a wet condition, as determined by ASTM F1677-05 or ASTM F1679-04. Furnish flat head stainless steel sleeve anchors in accordance with ASTM F593 Group 1 Alloy 304 for attaching sidewalk cover plates.

ARTICLE 962-11 is deleted and the following substituted:

962-11 Galvanizing.

962-11.1 Plates, Structural Shapes, Bars, and Strip: When galvanizing is specified in the Contract Documents for ferrous metal products, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet "Intermediate Grade" in accordance with ASTM B6 and Table 962-146.

Table 962-146 Requirements for Galvanizing Bath Composition			
Product	Zinc (Zn)	Lead (Pb)	Tin (Sn)
Galvanizing Bath	$\geq$ 99.00%	$\leq$ 0.50%	$\leq$ 0.10%

962-11.2 Castings: When Alternative G castings are specified in the contract documents, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet 962-11.1.

962-11.3 Fasteners and Hardware:

962-11.3.1 Fasteners and Hardware Designated Not High-Strength: When zinc coating is required in the contract documents provide galvanizing of steel or malleable iron in accordance with the requirements of ASTM A153 or ASTM A1059 Coating Class 25 to 35.

962-11.3.2 Fasteners and Hardware Designated as High-Strength: When zinc coating is required in the Contract Documents, provide galvanizing in accordance with Table 962-1~~5~~7. Bake all hot dipped or electroplated bolt, rod, or bar with a tensile strength greater than or equal to 150 ksi to remove any residual hydrogen.

Table 962-1~~5~~7
Coating Requirements for Fastener and Hardware Designated as High-Strength

Product	ASTM	Grade	Type/Style	Coating Finish
Bolts	F3125	A325	1	ASTM B695, Class 55 ASTM F2329 (not allowed for bridges)
	A354	BC	Heavy Hex	
	A324	BC	Any	
Anchor Rods	F1554	105	All	ASTM B633 SC 3, Type II
	F1554	36, 55	All	ASTM B695 Class 55 ASTM F2329
Nuts	A563	DH	Heavy Hex	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
	F844	Round, Miscellaneous	Plain	
DTI Devices	F959	A325	1	ASTM B695 Class 55

ARTICLE 962-13 is deleted and the following substituted:

962-13 Fence Materials.

962-13.1 ~~General~~Standard Fencing:

~~The types of fence are designated as follows~~The following fence types are detailed per the Standard Plans:

Type A (Farm Fence).
Type A (Wildlife Fence).
Type B (Chain-Link Fence).
Type R (Chain-Link Fence for Pedestrian Overpass).

All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-1~~6~~8.

Table 962-1~~6~~8
APL Requirements for Fence Materials

Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

962-13.~~2~~1.1 Fence Fabric Material Requirements: Provide fencing materials in accordance with this Section and Table 962-~~17~~19. When galvanizing is specified, provide galvanizing in accordance with the contract documents.

Table 962-1~~7~~9
Material Requirements for Fencing Fabric

Fence Type	Standard	Grade / Type	Style	Other requirements, including Coating
Fabric Type A (Farm)	A116	60	No. 9	Galvanized, Design No. 1047-6-9, Class 3 zinc coating
Type A (Farm)		175	No. 12-1/2	Galvanized, Design No. 1047-6-12 1/2 , Class 3 zinc coating, with a 10 1/2 gage top and bottom wire
Type A (Wildlife)		175	No. 12-1/2	Galvanized, Design No. 2096-6-12 1/2, Class 3 zinc coating
Type A (Farm)	A584	175	No. 9	Aluminum Coated, Design Number 1047-6-9, with a minimum coating weight of 0.40 oz/ft²
Type A (Wildlife)			No. 12-1/2	Aluminum Coated, Design Number 2096-6-12.5, with minimum coating weight of 0.40 oz/ft2

Table 962-179 Material Requirements for Fencing Fabric				
Fence Type	Standard	Grade / Type	Style	Other requirements, including Coating
Type B (Chain link)	M181	I	No. 9	Zinc Coated Steel, rate of 1.8 oz/ft2*
		II		Aluminum Coated Steel, rate of 0.40 oz/ft2
		IV		Polyvinyl Chloride (PVC) coated steel, core wire Zinc Coated Steel, PVC Coating: M181 Class A (either extruded or extruded and bonded) or Class B (bonded) **
Type R	A392	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
Type R	A491	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
Type R	F668	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
* M181 Class D 2.0 oz./ft^2 modified to 1.8 oz./ft^2 ** Unless the Plans call for M181 standard colors medium green or black, the coating color shall be soft gray matching that of No. 36622 of Federal Standard 595a				

962-13.~~3~~1.2 Steel Posts for Fence: Meet the requirements of Table 962-~~18~~20.

Table 962-~~18~~20 Steel Posts, Beams, and Pipe Tube for Fence				
Product	Fence Type	Standard	Dimensions, Minimum	Requirements
Line Posts	Type A (Farm)	A702(18 in^2)	8’ long	1.33 lb/ft, hot rolled studded; anchor plate attached. Galvanized at the rate of 2 oz/ft^2
	Type B	ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2
		ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia., 1.90” OD	Aluminum Coated, Coated at the rate of 0.40 oz/ft2

Table 962-~~18~~20 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
		AASHTO M111	1-7/8” x 1-5/8”	Steel H-Beam; Zinc Galvanized at the rate of 1.8 oz/ft2	
		ASTM F1043, and AASHTO M111	Steel C, 1-7/8” x 1-5/8”	AASHTO M111, OR 0.9 oz./ft². zinc-5% aluminum- mischmetal; ASTM F1043 and Standard Index 550-002	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2" OD, 1-1/2” NPS, 1.900” Dec equiv., 0.120” min wall thick. And min wt 2.28 lb/ft;	Resistance welded steel pipe; 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003” min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Approach Posts	Type A (Farm)	-	2-1/2”x 2-1/2”x1/4” angles, 8’ long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Pull, End and Corner Posts	Type A (Farm)	-	2-1/2”x 2-1/2”x1/4” angles, 8’ long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness

Table 962-~~18~~20 Steel Posts, Beams, and Pipe Tube for Fence				
Product	Fence Type	Standard	Dimensions, Minimum	Requirements
	Type B	ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2
		ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia., 2.375" O.D.	Coated at the rate of 0.40 oz/ft2
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2.5" OD, 2" NPS, 2.375" dec equiv, 0.130" min wall thickness and min wt 3.117 lb/ft	Resistance welded steel pipe: 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.
Rail Options	Type B	ASTM A53 X2 Tables, ASTM F1083 and AASHTO M111	Schedule 40- 11 #4" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2
		ASTM A53 AASHTO M111	Schedule 40- 11 #4" nominal dia., 1.660" O.D.	Aluminum Coated, Coated at the rate of 0.40 oz/ft

Table 962-~~18~~20 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
		ASTM A569/A569M, ASTM A653/A653M, , or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 15 #8" O.D., 11 #4" NPS, 1.660" dec. equiv., 0.111 min. wall thick. And min. wt. 1.836 lb/ft	Resistance welded steel pipe; 50,000 psi min. yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C, or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
		ASTM F1043	-	-	-
Pipe, Tube	Type B	A53	A, B	E, F, S	Grade, Finish
	Type R	F1083	Schedule 40	High Strength	Schedule
	Type B	F1043	1C	All	Group, Coating, Type
			1A	High strength	
Braces	Type A (Farm)	-	2"x 2"x 1/4" angles	With necessary hardware and fabricated for attaching to post. Galvanized at the rate of 2 oz/ft²	
Beam	Type R	A36	36	All Shapes	Grade, Killed
		A572	42		
		A992	50		
Sheets	-	A1011	36, 45, 50	HSLAS, HSLAS-F, SS	Designation, Style D

962-13.~~4~~1.3 Tie Wire and Barbed Wire for Fence: Meet the requirements of Table 962-19:

Table 962-~~19~~21 Tie Wire and Barbed Wire Requirements			
Tie Wire Requirements			
Product	Fence Type	Standard	Requirements

Tie Wire	Type A (Farm)	ASTM A641	Steel wire 0.120” diameter with Zinc coating Class 3, soft temper
	Type B	-	Steel wire No. 9 gage, zinc galvanized at rate of 1.2 oz/ft2
		-	Aluminum coated steel wire No. 7 gage, at rate of 0.040 oz/ft2
Hog Ring	Type B	-	Steel wire No. 9 gage, zinc galvanized at rate of 1.2 oz/ft2
			Aluminum coated steel wire No. 7 gage, at rate of 0.040 oz/ft2
Barbed Wire Requirements			
Barbed Wire	Type A (Farm)	ASTM A121	Type I: with two strands of 12-1/2 gage wire; four-point barbs, wire size 14 gage, twisted around both line wires; and Class 3 coating; Design No. 12-4-5-14R
			Type IIA: Same as Type I except the two strand wires are twisted in alternating directions between consecutive barbs
			Type IIB: with two strands og 15-1/2 gage high tensile wire; four-point barbs, wire size 16 ½ gage twisted around both line wires; and Class 3 coating; Design No. 15-4-5-16R
	Type A (Wildlife)		Type I: with two strands of 15-1/2 gage wire; four point barbs, wire size 14 gage, twisted around both line wires; class 3 coating
			Type II: same as Type I except the two strands are twisted in alternating directions between consecutive barbs
Tension Wire	Type B	AASHTO M181	Steel wire No. 7 gage, zinc galvanized at the rate of 1.2 oz/ft2
			Aluminum coated steel wire, No. 7 gage, coated at the rate of 0.040 oz/ft2

962-13.2 Anti-Climbing Fence

The Type M (Anti-Climbing Fence) shall be one of the products listed on the APL. Manufacturers seeking evaluation of their product must submit an application following the requirements of Section 6 along with the following documentation:

1. Product brochure or catalog sheets showing the company information along with the product name, photos, and special features (e.g., anti-climbing, anti-cutting, etc.).

2. Product technical drawings, including dimensions, materials, polymer coating, and wind capacity. The mesh design must include galvanized steel wires with a minimum size of 8 gauge and a maximum aperture of approximately 1/2 inch vertical by 3-inch horizontal. Provide details for fence height options 6 feet and taller. Include details for gates and locking mechanisms, if available.

3. Manufacturer's warranty for quality of materials, including corrosion and coating defects, covering a term of five years from the date of project acceptance.

ARTICLE 962-14 is deleted and the following substituted:

962-14 Modular Joints.

Furnish modular joints meeting the following material requirements:

Table 962-202 Component Material Requirements	
Solid Separation Beams, Steel Extrusions, Support Bars, Plate and Milled Steel Shapes	ASTM A588 or ASTM A572, Grade 50
Box Seals	ASTM D3542
Strip Seals	ASTM D5973
Seal Adhesive	ASTM D4070
Stud Shear Connectors and Threaded Studs	ASTM A108
Stainless Steel Sliding Plates	ASTM A240, Type 316
PTFE Sliding Surface	ASTM D4895
*Provide seals with hardness Type A durometer equal to 55 (plus or minus 5) by ASTM D2240.	

Supply test results from the manufacturer verifying the maximum coefficient of friction between mating surfaces. Testing must be performed by an independent testing laboratory according to the manufacturer's stated precompression values for the system to a minimum of two million cycles. Maximum allowed coefficient of friction is 0.10.

Bond PTFE (polytetrafluorethylene) using a heat cured, high temperature epoxy capable of withstanding temperatures of minus 40°F to plus 250°F.

For springs, bearing, and equidistance devices (i.e. control springs), use the same material composition and formulation, manufacturer, fabrication procedure and configuration as those used in the prequalification test. Components manufactured from polyurethane compounds are not permitted.

962-14.1 Fabrication: Perform all steel fabrication in accordance with the requirements of Section 460.

After fabrication, hot-dip galvanize all non-stainless steel metal surfaces in accordance with Section 962.

Joint systems must be designed in accordance with the latest edition of AASHTO LRFD Bridge Design Specifications. Supply joint systems for which identical full-size specimens have been subjected to full life-cycle fatigue testing.

Except for sliding plates, provide all load bearing structural steel components with a 3/8 inch minimum thickness in any direction. Construct edge rails consisting of a monolithic steel shape with a machined or extruded retainer cavity. Multiple component welded steel shapes to achieve a final member cross section or seal retainer cavity are not permitted. Attach separation beams to individual support bars with a complete joint penetration weld.

Support each separation beam with a dedicated support bar connected by a complete joint penetration welded connection. Use of bolted connections, yokes, or other means

to directly attach separation beams to support bars is not permitted. Maintain equal spacing between separation beams at all stages of movement.

Contain support bars with bearings capable of transferring all imposed loads to the structure and allow the support bar to freely move within the limits of the expansion joint.

Fabricate a full length modular joint system as one piece. Only a minimal number of splices in an individual joint may be permitted where a construction joint is specifically required by the Plans, joint segment length exceeds 50 feet, or approved by the Engineer in writing.

When phased construction is permitted, fabricate each segment to exactly fit that portion of superstructure, including sidewalks, under construction in each specific phase. Connect segments with a bolted splice to ensure continuity. Fit segments with temporary seals. Lubricant adhesive is not required for temporary seals. Submit watertight seal details for the splice. Shop inspection will be conducted at the discretion of the Engineer in accordance with Article 5-6.

Fabricate final seal assembly as one single, continuous component. Splicing of seals in the field is not permitted.

Provide lifting devices and devices to maintain the preset opening of the joint at a uniform spacing of not greater than 15 feet along the length of the joint. Provide at least three of these preset opening devices per joint segment. Provide lifting and preset opening devices that function and then are removed without damaging the modular joint system assemblies or galvanized coating.

Prior to shipment, preset the joint opening in accordance with the joint opening as shown in the Plans at 70°F.

Prior to installation, place the centerbeam/support bar assembly on a flat surface to verify the support bars lay in a single plane, with no part of the bottom of any support bar exceeding 0.25 inches off the surface. The subassembly may be straightened. No more than three attempts may be made to heat-straighten the subassembly.

Polish stainless steel sliding surfaces to an 8 μ-inch mirror finish.

962-14.2 Certification: Submit a certification showing that the product meets the Modular Joint requirements of this Article.

STRUCTURAL STEEL AND MISCELLANEOUS METAL ITEMS (OTHER THAN ALUMINUM)
(REV 6-30-26)

SUBARTICLE 962-10.3 is deleted and the following substituted:

962-10.3 Steel Grates: All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-13.

Table 962-13
APL Requirements for Steel Grates

Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

Provide steel grating in accordance with this section and Table 962-14. When vaned gratings are specified, AASHTO HL-93 load testing may be substituted for tensile testing when specified in the contract documents. When Alternate G is specified, provide galvanizing in accordance with 962-11.1.

Table 962-14
Requirements for Steel Grating

Product	Standard	Grade	Type/ Style	Reportable Properties
Steel Grating	A242	50	1	Composition, Tensile*, Killed
	A572		1, 2, 3, 5	Composition, Tensile*, Size, Killed
	A588		A, B, K	Composition, Tensile*, Fine Grain
	A1011	Any	SS, HSLAS, HSLAS-F	Designation, Style

* AASHTO HL-93 may be substituted for tensile testing for vaned gratings when specified.

SUBARTICLE 962-10.4 is deleted and the following substituted:

962-10.4 Galvanized Steel Sidewalk Cover Plates: All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-15.

Table 962-15
APL Requirements for Cover Plates

Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

Cover Plates shall be slip resistant, random hatch matrix or suitable pattern, galvanized steel sidewalk fabricated from steel meeting the requirements of ASTM A36 or ASTM A709, Grade 36 or 50. Do not use diamond plate or surface applied slip resistant tapes, films, nonmetallic coatings or other similar materials. Fabricate cover plates in accordance with Standard Plans, Indexes 458-100 and 458-110. After shop fabrication, hot-dip galvanize cover plates in accordance with Section 962. Galvanized sidewalk cover plates shall have a minimum coefficient of friction on the top surface of 0.8 in dry condition, and 0.65 in a wet condition, as determined by ASTM F1677-05 or ASTM F1679-04. Furnish flat head stainless steel sleeve anchors in accordance with ASTM F593 Group 1 Alloy 304 for attaching sidewalk cover plates.

ARTICLE 962-11 is deleted and the following substituted:

962-11 Galvanizing.

962-11.1 Plates, Structural Shapes, Bars, and Strip: When galvanizing is specified in the Contract Documents for ferrous metal products, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet "Intermediate Grade" in accordance with ASTM B6 and Table 962-16.

Table 962-16
Requirements for Galvanizing Bath Composition

Product	Zinc (Zn)	Lead (Pb)	Tin (Sn)
Galvanizing Bath	$\geq$ 99.00%	$\leq$ 0.50%	$\leq$ 0.10%

962-11.2 Castings: When Alternative G castings are specified in the contract documents, provide galvanizing in accordance with the requirements of ASTM A123 or AASHTO M111. Zinc composition shall meet 962-11.1.

962-11.3 Fasteners and Hardware:

962-11.3.1 Fasteners and Hardware Designated Not High-Strength: When zinc coating is required in the contract documents provide galvanizing of steel or malleable iron in accordance with the requirements of ASTM A153 or ASTM A1059 Coating Class 25 to 35.

962-11.3.2 Fasteners and Hardware Designated as High-Strength: When zinc coating is required in the Contract Documents, provide galvanizing in accordance with Table 962-17. Bake all hot dipped or electroplated bolt, rod, or bar with a tensile strength greater than or equal to 150 ksi to remove any residual hydrogen.

Table 962-17
Coating Requirements for Fastener and Hardware Designated as High-Strength

Product	ASTM	Grade	Type/Style	Coating Finish
Bolts	F3125	A325	1	ASTM B695, Class 55 ASTM F2329 (not allowed for bridges)
	A354	BC	Heavy Hex	
	A324	BC	Any	
Anchor Rods	F1554	105	All	ASTM B633 SC 3, Type II
	F1554	36, 55	All	ASTM B695 Class 55 ASTM F2329
Nuts	A563	DH	Heavy Hex	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
Washers	F436	Circular, Beveled, Clipped, Extra Thick	1	ASTM B695 Class 55 ASTM F2329 (not allowed for bridges)
	F844	Round, Miscellaneous	Plain	
DTI Devices	F959	A325	1	ASTM B695 Class 55

ARTICLE 962-13 is deleted and the following substituted:

962-13 Fence Materials.

962-13.1 Standard Fencing:

The following fence types are detailed per the Standard Plans:
Type A (Farm Fence).
Type A (Wildlife Fence).
Type B (Chain-Link Fence).
Type R (Chain-Link Fence for Pedestrian Overpass).

All materials shall be one of the products listed on the Department's Approved Product List (APL). Manufacturers seeking evaluation of their product shall submit an application in accordance with Section 6 and include the documentation identified in Table 962-18.

Table 962-18
APL Requirements for Fence Materials

Documentation	Requirements (edit as needed for specific products)
Product Photo	Provide product photos that display the significant features of the product.
Product Label and Packaging	Provide label and packaging photos for all manufacturer supplied installation materials.
Technical Data Sheet	Provide product literature that uniquely identifies the product, storage instructions.
Manufacturer's Certification	Provide Manufacturer's Certification showing compliance with the material requirements of this Section.
Product Sample (for APL listing)	A sample may be requested to verify the product, in accordance with the specifications.

962-13.1.1 Fence Fabric Material Requirements: Provide fencing materials in accordance with this Section and Table 962-19. When galvanizing is specified, provide galvanizing in accordance with the contract documents.

Table 962-19
Material Requirements for Fencing Fabric

Fence Type	Standard	Grade / Type	Style	Other requirements, including Coating
Fabric Type A (Farm)	A116	60	No. 9	Galvanized, Design No. 1047-6-9, Class 3 zinc coating
Type A (Farm)		175	No. 12-1/2	Galvanized, Design No. 1047-6-12 1/2 , Class 3 zinc coating, with a 10 1/2 gage top and bottom wire
Type A (Wildlife)		175	No. 12-1/2	Galvanized, Design No. 2096-6-12 1/2, Class 3 zinc coating
Type A (Farm)	A584	175	No. 9	Aluminum Coated, Design Number 1047-6-9, with a minimum coating weight of 0.40 oz/ft²
Type A (Wildlife)			No. 12-1/2	Aluminum Coated, Design Number 2096-6-12.5, with minimum coating weight of 0.40 oz/ft2
Type B (Chain link)	M181	I	No. 9	Zinc Coated Steel, rate of 1.8 oz/ft2*

Table 962-19 Material Requirements for Fencing Fabric				
Fence Type	Standard	Grade / Type	Style	Other requirements, including Coating
		II		Aluminum Coated Steel, rate of 0.40 oz/ft2
		IV		Polyvinyl Chloride (PVC) coated steel, core wire Zinc Coated Steel, PVC Coating: M181 Class A (either extruded or extruded and bonded) or Class B (bonded) **
Type R	A392	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
Type R	A491	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
Type R	F668	All	No. 9	See Index 550-010, 550-011, 550-012, or 550-013
* M181 Class D 2.0 oz./ft^2 modified to 1.8 oz./ft^2 ** Unless the Plans call for M181 standard colors medium green or black, the coating color shall be soft gray matching that of No. 36622 of Federal Standard 595a				

962-13.1.2 Steel Posts for Fence: Meet the requirements of Table 962-20.

Table 962-20 Steel Posts, Beams, and Pipe Tube for Fence				
Product	Fence Type	Standard	Dimensions, Minimum	Requirements
Line Posts	Type A (Farm)	A702(18 in^2)	8’ long	1.33 lb/ft, hot rolled studded; anchor plate attached. Galvanized at the rate of 2 oz/ft^2
	Type B	ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2
		ASTM A53 Table 2 (Grade A or B); ASTM F1083, and AASHTO M111	Schedule 40: 1-1/2” nominal dia., 1.90” OD	Aluminum Coated, Coated at the rate of 0.40 oz/ft2
		AASHTO M111	1-7/8” x 1-5/8”	Steel H-Beam; Zinc Galvanized at the rate of 1.8 oz/ft2

Table 962-20 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
		ASTM F1043, and AASHTO M111	Steel C, 1-7/8" x 1-5/8"	AASHTO M111, OR 0.9 oz./ft². zinc-5% aluminum- mischmetal; ASTM F1043 and Standard Index 550-002	
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2" OD, 1-1/2" NPS, 1.900" Dec equiv., 0.120" min wall thick. And min wt 2.28 lb/ft;	Resistance welded steel pipe; 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Approach Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
Pull, End and Corner Posts	Type A (Farm)	-	2-1/2"x 2-1/2"x1/4" angles, 8' long	Fabricated for attaching brace; with necessary hardware. Galvanized at the rate of 2 oz/ft²	
	Type R	A702	50	Carbon, Rail	Tensile or Hardness
	Type B	ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2	

Table 962-20 Steel Posts, Beams, and Pipe Tube for Fence				
Product	Fence Type	Standard	Dimensions, Minimum	Requirements
		ASTM A53 X2 Tables; ASTM F1083, and AASHTO M111	Schedule 40: 2" nominal dia., 2.375" O.D.	Coated at the rate of 0.40 oz/ft2
		ASTM A569/A569M, A653/A653M or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 2.5" OD, 2" NPS, 2.375" dec equiv, 0.130" min wall thickness and min wt 3.117 lb/ft	Resistance welded steel pipe: 50,000 psi min yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.
Rail Options	Type B	ASTM A53 X2 Tables, ASTM F1083 and AASHTO M111	Schedule 40- 11 #4" nominal dia.	Zinc galvanized at the rate of 1.8 oz/ft2
		ASTM A53 AASHTO M111	Schedule 40- 11 #4" nominal dia., 1.660" O.D.	Aluminum Coated, Coated at the rate of 0.40 oz/ft

Table 962-20 Steel Posts, Beams, and Pipe Tube for Fence					
Product	Fence Type	Standard	Dimensions, Minimum	Requirements	
		ASTM A569/A569M, ASTM A653/A653M, , or undepleted stock of discontinued A446/A446M base materials; ASTM F669 Group IV (Alternative Design)	Fence Industry 15 #8" O.D., 11 #4" NPS, 1.660" dec. equiv., 0.111 min. wall thick. And min. wt. 1.836 lb/ft	Resistance welded steel pipe; 50,000 psi min. yield strength; ASTM F1043 metric equivalent internal coating Types A, B, C, or D and external coating Types A, B, or C; the chromate conversion coating of external Type B shall have a thickness of 15 µg/in² min. and the polymer film topcoat shall have a thickness of 0.0003" min.; internal and external coatings are not restricted to the combinations of Table 2, ASTM F1043.	
		ASTM F1043	-	-	-
Pipe, Tube	Type B	A53	A, B	E, F, S	Grade, Finish
	Type R	F1083	Schedule 40	High Strength	Schedule
	Type B	F1043	1C	All	Group, Coating, Type
			1A	High strength	
Braces	Type A (Farm)	-	2"x 2"x 1/4" angles	With necessary hardware and fabricated for attaching to post. Galvanized at the rate of 2 oz/ft²	
Beam	Type R	A36	36	All Shapes	Grade, Killed
		A572	42		
		A992	50		
Sheets	-	A1011	36, 45, 50	HSLAS, HSLAS-F, SS	Designation, Style D

962-13.1.3 Tie Wire and Barbed Wire for Fence: Meet the requirements of Table 962-19:

Table 962-21 Tie Wire and Barbed Wire Requirements			
Tie Wire Requirements			
Product	Fence Type	Standard	Requirements

Tie Wire	Type A (Farm)	ASTM A641	Steel wire 0.120” diameter with Zinc coating Class 3, soft temper
	Type B	-	Steel wire No. 9 gage, zinc galvanized at rate of 1.2 oz/ft2
		-	Aluminum coated steel wire No. 7 gage, at rate of 0.040 oz/ft2
Hog Ring	Type B	-	Steel wire No. 9 gage, zinc galvanized at rate of 1.2 oz/ft2
			Aluminum coated steel wire No. 7 gage, at rate of 0.040 oz/ft2
Barbed Wire Requirements			
Barbed Wire	Type A (Farm)	ASTM A121	Type I: with two strands of 12-1/2 gage wire; four-point barbs, wire size 14 gage, twisted around both line wires; and Class 3 coating; Design No. 12-4-5-14R
			Type IIA: Same as Type I except the two strand wires are twisted in alternating directions between consecutive barbs
			Type IIB: with two strands og 15-1/2 gage high tensile wire; four-point barbs, wire size 16 ½ gage twisted around both line wires; and Class 3 coating; Design No. 15-4-5-16R
	Type A (Wildlife)		Type I: with two strands of 15-1/2 gage wire; four point barbs, wire size 14 gage, twisted around both line wires; class 3 coating
			Type II: same as Type I except the two strands are twisted in alternating directions between consecutive barbs
Tension Wire	Type B	AASHTO M181	Steel wire No. 7 gage, zinc galvanized at the rate of 1.2 oz/ft2
			Aluminum coated steel wire, No. 7 gage, coated at the rate of 0.040 oz/ft2

962-13.2 Anti-Climbing Fence

The Type M (Anti-Climbing Fence) shall be one of the products listed on the APL. Manufacturers seeking evaluation of their product must submit an application following the requirements of Section 6 along with the following documentation:

1. Product brochure or catalog sheets showing the company information along with the product name, photos, and special features (e.g., anti-climbing, anti-cutting, etc.).

2. Product technical drawings, including dimensions, materials, polymer coating, and wind capacity. The mesh design must include galvanized steel wires with a minimum size of 8 gauge and a maximum aperture of approximately 1/2 inch vertical by 3-inch horizontal. Provide details for fence height options 6 feet and taller. Include details for gates and locking mechanisms, if available.

3. Manufacturer's warranty for quality of materials, including corrosion and coating defects, covering a term of five years from the date of project acceptance.

ARTICLE 962-14 is deleted and the following substituted:

962-14 Modular Joints.

Furnish modular joints meeting the following material requirements:

Table 962-22 Component Material Requirements	
Solid Separation Beams, Steel Extrusions, Support Bars, Plate and Milled Steel Shapes	ASTM A588 or ASTM A572, Grade 50
Box Seals	ASTM D3542
Strip Seals	ASTM D5973
Seal Adhesive	ASTM D4070
Stud Shear Connectors and Threaded Studs	ASTM A108
Stainless Steel Sliding Plates	ASTM A240, Type 316
PTFE Sliding Surface	ASTM D4895
*Provide seals with hardness Type A durometer equal to 55 (plus or minus 5) by ASTM D2240.	

Supply test results from the manufacturer verifying the maximum coefficient of friction between mating surfaces. Testing must be performed by an independent testing laboratory according to the manufacturer's stated precompression values for the system to a minimum of two million cycles. Maximum allowed coefficient of friction is 0.10.

Bond PTFE (polytetrafluorethylene) using a heat cured, high temperature epoxy capable of withstanding temperatures of minus 40°F to plus 250°F.

For springs, bearing, and equidistance devices (i.e. control springs), use the same material composition and formulation, manufacturer, fabrication procedure and configuration as those used in the prequalification test. Components manufactured from polyurethane compounds are not permitted.

962-14.1 Fabrication: Perform all steel fabrication in accordance with the requirements of Section 460.

After fabrication, hot-dip galvanize all non-stainless steel metal surfaces in accordance with Section 962.

Joint systems must be designed in accordance with the latest edition of AASHTO LRFD Bridge Design Specifications. Supply joint systems for which identical full-size specimens have been subjected to full life-cycle fatigue testing.

Except for sliding plates, provide all load bearing structural steel components with a 3/8 inch minimum thickness in any direction. Construct edge rails consisting of a monolithic steel shape with a machined or extruded retainer cavity. Multiple component welded steel shapes to achieve a final member cross section or seal retainer cavity are not permitted. Attach separation beams to individual support bars with a complete joint penetration weld.

Support each separation beam with a dedicated support bar connected by a complete joint penetration welded connection. Use of bolted connections, yokes, or other means

to directly attach separation beams to support bars is not permitted. Maintain equal spacing between separation beams at all stages of movement.

Contain support bars with bearings capable of transferring all imposed loads to the structure and allow the support bar to freely move within the limits of the expansion joint.

Fabricate a full length modular joint system as one piece. Only a minimal number of splices in an individual joint may be permitted where a construction joint is specifically required by the Plans, joint segment length exceeds 50 feet, or approved by the Engineer in writing.

When phased construction is permitted, fabricate each segment to exactly fit that portion of superstructure, including sidewalks, under construction in each specific phase. Connect segments with a bolted splice to ensure continuity. Fit segments with temporary seals. Lubricant adhesive is not required for temporary seals. Submit watertight seal details for the splice. Shop inspection will be conducted at the discretion of the Engineer in accordance with Article 5-6.

Fabricate final seal assembly as one single, continuous component. Splicing of seals in the field is not permitted.

Provide lifting devices and devices to maintain the preset opening of the joint at a uniform spacing of not greater than 15 feet along the length of the joint. Provide at least three of these preset opening devices per joint segment. Provide lifting and preset opening devices that function and then are removed without damaging the modular joint system assemblies or galvanized coating.

Prior to shipment, preset the joint opening in accordance with the joint opening as shown in the Plans at 70°F.

Prior to installation, place the centerbeam/support bar assembly on a flat surface to verify the support bars lay in a single plane, with no part of the bottom of any support bar exceeding 0.25 inches off the surface. The subassembly may be straightened. No more than three attempts may be made to heat-straighten the subassembly.

Polish stainless steel sliding surfaces to an 8 μ-inch mirror finish.

962-14.2 Certification: Submit a certification showing that the product meets the Modular Joint requirements of this Article.